

Many other system configurations are possible, as will be clear from the following description. Furthermore, throughout the specification reference will be made to audio files or to digital audio files. Audio in this context refers to any audible content, tone, or sound, regardless of how the audio has been generated. Audio can include, for example, music, songs, tunes, tracks, titles, voice, speech and other content similar or analogous to content that can be provided by a broadcast radio station.

At the remote side of the system, the web server (135) is the part of the content server (160) that is used to provide a user interface between the users that are connected to a communication network (130) and the application server (140), which is the central part of the content server (160). The web server typically hosts web pages that are associated with a user interface and services for selecting audio files to transfer from the server to a pass-through device (115) or playback device (105, 110) and web pages that are associated with the management of the personal user account. A user can view the web pages either in a web browser on his or her computer, or on a display on a playback device, such as home stereo or a personal digital assistant (PDA), for example. The user can either purchase the audio files for unlimited playback on his or her playback device (105, 110), or rent the audio files for a time limited period or a limited number of playbacks, or receive them for free as a promotional offer.

The web server (135) communicates with the application server (140). The application server does not allow any direct user interaction. Any commands the user wishes to send the application server have to go through a communication module (120, 125) on the local side of the system and/or a web browser that is in communication with the web server (135) on the remote side of the system. The communication module (120, 125) will be described in further detail below. The application server acts as a coordinator for the content server (160) and can communicate with the communication modules (120, 125) on the local side of the system, the web server (135), the user database (145), the content database (150), the device database (165) and the license server (170) with its associated usage rights database (155) on the remote side of the system. The restriction that are user has to communicate with the application server through a web browser and a web server makes it possible to abstract user interfaces and serving web pages from the back and functions of the application server. However, in a different implementation, the communication layer on the

application server can provide the functionality for communicating with the devices on the local side in different ways, such as directly with communication module that can handle communication relating to file delivery and device status, without providing any user interface.

5 The user database (145) contains information about the users and information relating to their digital media playback devices (105, 110), in particular what devices are associated with what users. The content database (150) is a database in which audio files and associated metadata are stored. The device database (165) contains information about different types of audio playback devices (105, 110) and their capabilities of playing back different types of
10 audio files. The usage rights database (155) contains usage rights for the audio files in the content database. The license server (170) receives requests for licenses from the application server (140) and issues licenses in response to the requests, based on information in its associated usage rights database (155).

 On the local side of the delivery system, a communication module (120, 125) is
15 designed to communicate with the application server (140). The communication module (120, 125) can be located in a playback device (105, 110), or in a pass-through device (115). The communication module (120, 125) contains the functionality required for communicating with the content server (160), including sending requests and information about the playback device to the content server (160) and receiving audio files and
20 instructions from the content server (160). The communication module can be implemented in software or firmware, so that it can be implemented both on devices without full operating systems and devices with full operating systems. Examples of requests that a communication module can send to the server include requests to get new audio files, requests update the expiration information for audio files, requests to log on, and requests to authenticate the
25 playback device. In addition to requests, a communication module can also send status information for the playback device to the content server. Examples of instructions that can be received from the content server include instructions for updating existing expiration information or adding new expiration information for certain audio files, deleting audio files, permission to log on, and so on. The communication module forwards the received
30 instructions, including translating them into a different format if needed, to a content rights management (CRM) library residing on the device, which contains content rights

management functions that are used to manage the audio file rights on the playback device. This will be described in further detail below.

One example of a communication module (120, 125) with extended functionality is a download manager that has added support for content rights management (CRM). The download manager's properties and methods are fully described in U.S. patent application number 09/894,846. The download manager contains a web browser interface, inside which a browser specific core and a common core reside. The common core offers a common set of services (that is, properties and methods) that can be used by the browser specific components. The common core also forms an interface to a media device manager (MDM) and a digital rights manager (DRM).

The CRM library is a supplement to the DRM functionality in that it provides additional content management capabilities, in particular relating to play counts and time-based expirations (relative as well as absolute). CRM functions on the device include functions for validating the storage medium on which the audio files are stored, functions for checking if playback rights of audio files stored on the playback device have expired, functions for accessing device specific features and functions for reading data from and writing data to secure storage areas on the playback device. Other CRM functions that can be located either on the playback device or on the content server include functions for setting a play count, functions for setting an absolute expiration time, functions for setting a relative expiration time, functions for expiring content based on a clock at the content server and functions for deleting audio files or expiration information from the playback device.

A small secure permanent storage area (measured in kilobytes) is required in the playback device for managing each storage medium (internal or external) that can be attached to a playback device (105, 110). The information for each storage medium in the secure storage area includes an identifier (ID) of the medium and a hash value for a content rights file containing the rights for the audio files on the storage medium. Typically, a readable and writeable area of an internal flash memory in the playback device is used for the secure permanent storage area. The secure storage area does not have to exist within an audio file system on the device or be accessible by the device command set, but it must be accessible by the device software or firmware on the device that is responsible for decrypting and rendering the content.